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1 RECORD OF ORAL HEARING  
2 UNITED STATES PATENT AND TRADEMARK OFFICE

3  
4 BEFORE THE BOARD OF PATENT APPEALS  
5 AND INTERFERENCES  
6

7 *Ex parte* PAUL E. DENNEY, JAY R. EASTMAN, and  
8 PAUL M. FALLARA

9  
10 Appeal 2009-006007  
11 Application 10/690,833  
12 Technology Center 3700  
13

14 Oral Hearing Held: June 17, 2010  
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16  
17 Before, LINDA E. HORNER, JENNIFER D. BAHR, and KEN B. BARRETT  
18 *Administrative Patent Judges*  
19

20 ON BEHALF OF THE APPELLANT:

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1 JUDGE HORNER: Okay. So we'll begin with 2009-006007, and we've had  
2 an opportunity to review your case. You've got 20 minutes and you can  
3 proceed when you're ready.

4 DR. ITCHKAWITZ: All right. I have a one-page sheet with  
5 some figures if I could copy for each of you.

6 JUDGE HORNER: Are they figures from the record?

7 DR. ITCHKAWITZ: Yes.

8 JUDGE HORNER: That's fine.

9 DR. ITCHKAWITZ: So I know you had a chance to review the  
10 case. The Invention for this Application is a laser head for a concrete drilling  
11 system designed to be used in inhabited buildings, such as hospitals, where  
12 the use of conventional drilling systems would disturb the patients. Patients  
13 are also sensitive to disruptions, as you can imagine, of conventional drilling.  
14 But moving the patients out of the hospital to do the work is impractical. So  
15 this invention is intended to be used in seismic retrofitting in such a situation  
16 where reducing the disruptive effects of noise, fumes, vibrations and dust can  
17 be avoided.

18 So the system achieves this result in part due to the containment  
19 plenum, which is part connected to the laser head, and it confines and  
20 removes the irradiated material from the area where the laser is working. In  
21 particular, as recited by Claim 1, the containment plenum is cooled by a  
22 cooling medium flowing through a coolant conduit. Now, there are four  
23 pieces of prior art that are cited together in an obviousness rejection of Claim  
24 1, but it's our assertion that Claim 1 has elements which are missing from all  
25 of these references, in particular having a containment plenum as recited by

1 Claim 1 where it's cooled by a cooling medium flowing through the coolant  
2 conduit. The cited references either don't disclose any cooling, or when they  
3 do disclose cooling it's cooling of other elements of the optical system. They  
4 are elements which actually interact with the laser beam.

5 The Uraki reference which is shown on this sheet I handed you,  
6 the lower left is a representative figure from Uraki, that doesn't disclose any  
7 cooling. Otsubo, the second from the left, also doesn't describe any cooling.  
8 The third reference, Freiwald, which is shown in the third figure, it discloses  
9 cooling of a bladed material from material that's removed from the surface of  
10 the concrete by using ambient air, sucking air in through the bottom of the  
11 device and using that to cool this hot, bladed material, material that was  
12 irradiated by the laser. Freiwald also does disclosing using water or air  
13 cooling of optical elements that are far upstream from the containment  
14 plenum elements, such as lenses.

15 And then, lastly, the DiCurcio reference, which is the fourth one,  
16 shows cooling, but of the optical cavity where the laser light's created. It  
17 doesn't disclose cooling something like a containment plenum, which doesn't  
18 interact with the laser beam.

19 JUDGE BARRETT: The first reference, Uraki, you said that  
20 doesn't disclose cooling, but isn't the device immersed in water? Wouldn't the  
21 water serve as a coolant?

22 DR. ITCHKAWITZ: Uraki is silent about what the temperature  
23 is or whether there's cooling occurring or not. It is true that the Examiner  
24 cited an inherency argument to say that there must be some cooling. Well,  
25 first, that's not cooling through a cooling conduit, as is in Claim 1.

1 JUDGE BAHR: Since you brought that up, what is a cooling  
2 conduit, in other words, a cooling conduit of the plenum? Would just a fluid  
3 passing through the plenum itself be a conduit of the containment plenum or  
4 does there need to be some other conduit within the plenum, a tube or  
5 something? Or are we talking about a conduit that leads into the plenum?

6 DR. ITCHKAWITZ: Well, the claim recites, gives further  
7 limitations of what this coolant conduit is. It's something that's fluidly  
8 coupled to its source of the cooling medium that is spaced from the  
9 containment plenum.

10 JUDGE BAHR: What about water or air coming in and flowing  
11 through the plenum, if the walls of the plenum are the conduit?

12 DR. ITCHKAWITZ: That conceivably could be a conduit where  
13 it's bringing this medium from some distant place and going through in order  
14 to cool the containment plenum.

15 JUDGE HORNER: Is the capture chamber 26 of the Freiwald  
16 reference a containment plenum?

17 DR. ITCHKAWITZ: I would say not. It's not containing the  
18 irradiated material as is recited in our application. But even if it is determined  
19 to be a containment plenum, it's not cooling by using a coolant conduit. In  
20 fact, if we call element 26 a plenum, it's not disclosed to be cooled at all. All  
21 that Freiwald discloses is that the bladed material is cooled.

22 JUDGE HORNER: So there's an air stream flowing through that  
23 chamber?.

24 DR. ITCHKAWITZ: Yes.

25 JUDGE HORNER: But your position is we don't know whether

1 that's cooling that chamber?

2 DR. ITCHKAWITZ: That's correct.

3 JUDGE HORNER: Okay.

4 JUDGE BARRETT: Even if it wasn't explicitly disclosing that  
5 it's cooling the plenum, wouldn't one of ordinary skill in the art find it obvious  
6 that that air flowing through there could be used to cool the plenum?

7 DR. ITCHKAWITZ: It could or could not. The reference is  
8 silent on that and if you're relying on inherency that it must necessarily be  
9 cooling, that's not true. The temperature of the gas going through there could  
10 well be insufficient to cool that plenum or that element 26. And even if you  
11 were going to rely on the disclosure of Freiwald for the containment plenum  
12 that is cooled by a coolant conduit, we'd assert that you can't use Freiwald in  
13 conjunction with the Uraki reference.

14 Freiwald discloses the way it cools the bladed material is by  
15 using ambient air. It says "such ambient air is required in order to provide the  
16 coolant." Well, as was mentioned previously, Uraki is under water. There is  
17 no ambient air. You can't combine Freiwald with Uraki to get the claimed  
18 invention.

19 JUDGE BAHR: There is injected shield gas, right? Before the  
20 laser machining starts they actually evacuate the water from that front  
21 chamber 2, I think it is, and they've got shield gas in there.

22 DR. ITCHKAWITZ: That's right. They disclose forcing water  
23 out, you know, using pressurized gas. They disclose that it's an inert gas or  
24 it's a dry gas; and, even if some -- let's see if I can put my finger on where  
25 they actually said it. In Uraki at column 8, lines 27 through 29, they disclose

1 that this dry gas is heated; so it's not cooling. And despite the Examiner's  
2 citation of that it would inherently cool, that's just not true. Iraqi discloses  
3 that it's a heated gas.

4 JUDGE BARRETT: But isn't it all relative? You're talking a  
5 laser which presumably is very high temperatures. Even a heated gas may  
6 still be cooler than that and serve to cool the overall device.

7 DR. ITCHKAWITZ: Well, for the gas to cool the plenum, it has  
8 to be colder than the plenum. We're not given any information in Iraqi about  
9 the temperature of this gas except for the fact that it's heated. And so to try to  
10 make some inference about there must necessarily be cooling, this can't be  
11 done. It's not inherent in the system. And, if there are no other questions, I  
12 don't see any reason that we continue talking about this particular case.

13 JUDGE HORNER: Okay.

14 Whereupon, at 10:12 a.m., the proceedings were concluded.  
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